Pediatrics and Neonatology 63 (2022) 661–662

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Letter to the Editor

Phenibut withdrawal management in a neonate

Phenibut is a psychoactive substance that has anxiolytic properties; it is marketed as an emerging dietary supplement.[1,2] It was first developed in Russia in the 1960s. In the United States, it is legal to possess phenibut; however, it is not approved as a licensed drug from Food and Drug Administration. It is γ-aminobutyric acid $(GABA)_B$ agonist that possesses some $(GABA)_A$ agonist effects; it is similar in chemical structure to baclofen and can be easily procured online. It is used as a recreational drug to increase attention and concentration. Additionally, it is used as a muscle relaxant to decrease anxiety in social situations. The effects on infants born to mothers using phenibut are yet to be fully studied. Herein, we present a neonatal case of phenibut withdrawal that was successfully treated with lorazepam.

A white male newborn infant was born at $38^{6/7}$ weeks of gestation and admitted directly from the delivery room to the neonatal intensive care unit due to fever and sinus tachycardia, which were noted immediately after birth. The birth weight was 3410 g. The mother was a 25-year-old gravida 2 and para 0 female. The pregnancy was complicated due to pre-eclampsia, polyhydramnios, anxiety, depression, bipolar disorder, a history of atypical squamous cells on a pap smear, and poor prenatal care. The mother reported the use of lamotrigine and bupropion during her pregnancy. She used phenibut as a dietary supplement, which she procured online. She reported consuming approximately 12 g at the beginning of her pregnancy and had weaned herself down to five grams by the time of delivery. Drug screening in the mother and infant was negative for opioids, benzodiazepines, methadone metabolites, cocaine, amphetamine, and tetrahydrocannabinol.

On the fourth day after birth, the infant developed a continuous high-pitched cry, poor sleep, increased muscle tone, and tremors. Considering the pharmacologic properties and enormous amounts the mother was consuming (a typical dose is about 250–500 mg daily and the mother was consuming 12 g at a point), we suspected phenibut as part of the withdrawal symptoms. Breastfeeding was put on hold due to the concern of polydrug use. Neonatal abstinence scoring (NAS) or the Finnegan drug withdrawal scoring was started. Initially, the infant was treated with oral morphine, which did not yield a positive response. Considering the pharmacology of phenibut, which includes altering GABA receptor pathways, a decision was made to switch to oral lorazepam at a dose of 0.1 mg/kg/day every 6 h. As result, a gradual improvement in NAS was noted, thus lorazepam was weaned and discontinued. No adverse side effects of lorazepam were noted. Fig. 1 depicts the NAS score trend and lorazepam weaning. The infant was discharged and, on a follow-up visit, was noted to have no neurological deficit, thus gaining appropriate weight with normal developmental milestones.

Phenibut has a half-life of 5.3 h but its effects can last up to a day. It does not manifest in standard urine drug screening.[3] This makes phenibut withdrawal a clinical diagnosis. Our case is the first case of phenibut neonatal

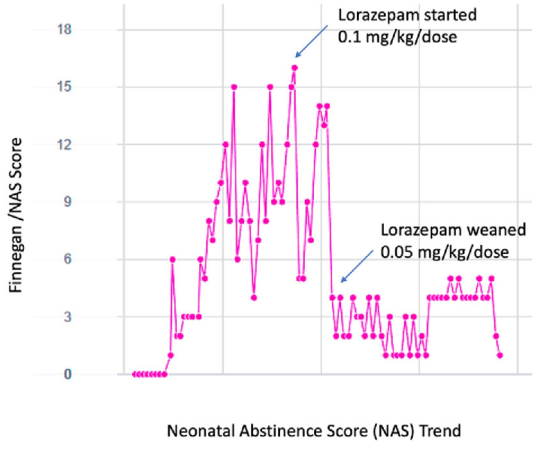

Figure 1 Neonatal Abstinence Scores (NAS) over time. Graphic representation of NAS scoring changes with labeled time of lorazepam treatment.

https://doi.org/10.1016/j.pedneo.2022.02.007
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withdrawal reported from the United States. An extensive literature search showed no such reports. Cases in adults, which were successfully treated with baclofen and benzodiazepines, have been reported.[4,5] Currently, there are no published guidelines available for the treatment of the complications of phenibut withdrawal in infants. Neonatal abstinence syndrome has traditionally been treated with morphine; however, in this case, we treated the infant with lorazepam since phenibut does not affect μ-opioid receptors but alters GABA receptor pathways. Since this is the first case report, there is no available report to ascertain whether phenibut affects the neonatal brain. There were no symptoms or imaging suggesting brain damage in the infant.

In conclusion, phenibut withdrawal should be considered in the differential diagnosis of NAS. If maternal history is positive for phenibut, oral lorazepam administration is recommended as a better treatment alternative to morphine administration.

Conflict of interest

The authors have no conflicts of interest relevant to this article.

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Jan 4, 2022